

Abstract of the Disclosure

A SHARED RESOURCE QUEUE FOR SIMULTANEOUS MULTITHREADED PROCESSING

1 A queue, such as a first-in first-out queue, is incorporated into a
 2 processing device, such as a multithreaded pipeline processor. The queue
 3 may store the resources of more than one thread in the processing device
 4 such that the entries of one thread may be interspersed among the entries of
 5 another thread. The entries of each thread may be identified by a thread
 6 identification, a valid marker to indicate if the resources within the entry are
 7 valid, and a bank number. For a particular thread, the bank number tracks
 8 the number of times a head pointer pertaining to the first entry has passed a
 9 tail pointer. In this fashion, empty entries may be used and the resources
 10 may be efficiently allocated. In a preferred embodiment, the shared resource
 11 queue may be implemented into an in-order multithreaded pipelined
 12 processor as a queue storing resources to be dispatched for execution of
 13 instructions. The shared resource queue may also be implemented into a
 14 branch information queue or into any queue where more than one thread
 15 may require dynamic registers.